REMARKS

Claims 1 and 3-10 are in the application.

As a result of the foregoing amendment, claim 1 has been amended by adding the subject matter of claim 2 and claim 7 has been written in independent form.

Also, claim 10 has been added to the application. Claim 10 is directed to the fact that the two control lines 24 and 29 are separate from the high-pressure connection 8. This configuration is disclosed, for example, in the first sentence of the third paragraph on page 4 of the specification as originally filed. Accordingly, no new matter has been added.

Reconsideration and withdrawal of the objection to the drawings under 37 C.F.R. 1.83(a), are respectfully requested.

Submitted herewith is a replacement sheet with a formal drawing in which the connection path is clearly illustrated. The corrected drawing shows the invention more clearly. Thus, the control valve 15 includes a valve element 16 in the form of a sliding member. This valve element 16 either forms the path 23 between the lines 17 and 20 in order to empty the low pressure cylinder 143, or a path, shown without reference numeral, between

the supply connector 2 and the low pressure cylinder 14 in order to drive the pistons 11, 12 for producing a high pressure.

In the latter position, the auxiliary control path 31 additionally connects the supply connector 2 with an end face 30 of the valve member 16. However, this fact is only of significance during the startup of the pressure intensifier. The auxiliary control path 31 ensures that, after a longer interruption of the operation of the valve member 16, the control valve 15 is always in the position illustrated in the drawing, so that the low-pressure piston 12 can always be subjected to pressure.

The auxiliary control path 31 includes a throttle, shown without reference numeral, so that during the normal operation there is no fluid flowing from the larger pressure application surface. The drawing has been amended accordingly.

Reconsideration and withdrawal of the rejection of the claims under 35 U.S.C. 112, second paragraph, are also respectfully requested.

Applicants respectfully submit that the movement stroke of a piston is a clearly defined distance which the piston travels between its two end positions. These end positions, in turn, are

determined by the specific structural configurations of the piston. For example, they are determined by the axial length of the cylinder.

It is submitted that it is apparent to those skilled in the art that the drawing shows that the high pressure cylinder 11 can only be moved downwardly until the low pressure piston 12 makes contact with the end face 19. In the other direction, the high pressure cylinder 11 can only be moved until it contacts the end face to which the high pressure connection 8 is connected.

In addition, it is submitted that the high pressure chamber in the high pressure cylinder is that part which is axially delimited by the high pressure piston. Since the travel path of the piston between its two end positions is a known quantity, it is also clear which dimensions the high pressure piston has.

With respect to claim 3, it is pointed out that the term ``predetermined'' has been deleted.

Reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. 102(b) as being anticipated by Iversen and Baatrup, are also respectfully requested.

The present invention is directed to a pressure intensifier for fluids, particularly for hydraulic fluids.

The operational principle of such pressure intensifiers is relatively simple. A differential piston is used, wherein the normal supply pressure is applied to the larger surface of this differential piston, while the smaller surface of the differential piston, i.e., the end face of the high pressure piston, acts on that volume which is to be subjected to the higher pressure. This results in a pressure ratio according to the ratio of the end face of the low pressure piston to the end face of the high pressure piston.

Since the high pressure piston is capable of only subjecting a specific quantity of the fluid to the pressure, the special piston must be actuated repeatedly. For this purpose, a control valve is provided which, in turn, is actuated by the differential piston, as a rule by the high pressure piston. The actuation by means of the high pressure piston provides the advantage that a synchronous actuation can be effected between the actual pressure intensifier, i.e., the work performed by the differential piston, and the work performed by the control valve.

However, in the conventional pressure intensifiers, this has led to the result that the fluid whose pressure is to be

intensified always had to be the same as the fluid which actuates the control valve. This caused the possibilities of use of the pressure intensifier to be limited.

Therefore, the present invention is based on the object of making the operation of the pressure intensifier more flexible.

In accordance with the invention, the high pressure piston is used for separating the control lines from the high pressure line. This means that different fluids can be used in the control circuit, on the one hand, and in the high pressure circuit, on the other hand.

The reference to Iversen discloses a pressure intensifier in which the high pressure chamber 7 is connected to the supply connection P as well as to a control line 19. In the position of the differential piston 3, 4, 5 illustrated in Fig. 1, the high pressure piston 4 releases the control line 19 so that the slide member 17 of the control valve 18 can also be moved into the illustrated position in which it effects a connection between the low pressure cylinder 6 and the line 15 and, thus, with the supply connection P. The low pressure piston 3 then presses the high pressure piston 4 in the direction toward the high pressure connection 9. This closes the control line 19. As soon as the high pressure slide member 4, after another downward movement,

has released the control line 19, a connection exists between the control line 19 and the low pressure connection T, so that the pressure existing in the chamber 21 of the control valve 18 causes the slide member 17 of the control valve 14 to be pushed in the direction toward the connection HP. The slide member 17 then releases the connection between the low pressure cylinder 6 and the low pressure connection T.

When the low pressure cylinder 6 is then depressurized toward the low pressure chamber T, the pressure acting through the line 12 at the high pressure piston 4 once again presses the low pressure piston 3 into the position shown in Fig. 1, so that the line 19 is once again released. As soon as the high pressure then presses against the slide member 17 of the control valve 14, the slide member 17 is pushed into the position shown in Fig. 1.

It can be clearly seen that the high pressure connection 9 and the control line 19 are connected to each other through the high pressure cylinder 7. Accordingly, it is always necessary to use the same fluid that is used for the control of the control valve 14 and the supply of a unit which is connected to a device connected to the high pressure connection 9.

The operation of the device disclosed by Baatrup is similar. Also in this case, the line 38 which switches the control valve

24, is connected by the high pressure piston 44 either to the low pressure connection 20, 26, 28 or to the control line 38. In the latter case, the control line 38 is connected through the high pressure cylinder 54 to the supply connector 4.

The device disclosed by Hansen et al. operates in a manner which is similar to that of the pressure intensifier disclosed by references discussed above. In Hansen et al., a line, which is later used for controlling the control valve 10, extends away from the input connection IN. This line 18, 15 is interrupted by the low pressure piston 5 and releases it in a position in which an annular groove 23 coincides with the lines 18, 15.

Consequently, it is not possible to separate the control fluid and the pump fluid from each other.

Accordingly, it is submitted that none of the references relied on by the Examiner discloses the possibility of separating the two fluids, i.e., the pumped fluid and the fluid used for controlling are separated by the high pressure pistons. Consequently, the subject matter of claim 1 and the dependent claims is novel as compared to the references.

In addition, those skilled in the art cannot find any disclosure in the references how to proceed in order to separate

the two above-mentioned fluids from each other. It is particularly not clear from the art of record that a high pressure piston can be used for this purpose.

Accordingly, it is submitted that the art of record does not disclose or suggest the present invention as claimed.

Finally, the Examiner is also respectfully requested to reconsider and withdraw the double patenting rejections.

In view of the manner in which the patent claims were amended it is submitted that the double patenting rejections should be withdrawn.

It is further submitted that the application would now seem to be in condition for allowance and such action is earnestly requested.

Any additional fees or charges required at this time in connection with the application may be charged to Patent and Trademark Office Deposit Account No. 11-1835.

Respectfully submitted,
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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Trademarks, Alexandria, VA 22313-1451, on February 15, 2007.

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Date: February 15, 2007